tended, and their numbers keep on increasing from year to year. Undoubtedly, for an opportunist predator like the wolf this is a galore which translates in dozens of sheep killed every time a wolf pops up in the country.

In February 1999, the Federal Office for Environment, Forests and Landscape launched a project - the *Swiss Wolf Project* (*SWP*) - in order to solve the conflicts generated by the wolf and make possible the cohabitation with man. The project is conducted by KORA (Coordinated research projects for the conservation and management of carnivores in Switzerland) and has three main objectives : prevention, information and monitoring. While the wildlife management service of the canton is in charge of the monitoring at the local level, which mainly consists of looking for wolf signs when an observation has been announced and assessing its reliability, KORA coordinates the monitoring at the national level, gathering and analyzing the data. All members of the project are involved to a greater or lesser extent in public relations and dispense the relevant information to local people on the spot, through the media or during public talks. A quarterly bulletin with the project' s latest news is also edited by the KORA and sent free of charge to everyone interested in getting it. Damage prevention is currently an objective of first importance for the project but is definitely not an easy task. One major difficulty encountered by the *SWP* is to convince the farmers to protect their sheep, since for most of them to agree to prevent means accepting the wolf. Nevertheless, several farmers consented to apply preventive measures against wolf depredations. All measures are entirely paid by the *SWP*. So far, 25 guard dogs – mainly Great Pyrenees – have been introduced in different sheep flocks, some of them already before the start of the *SWP* (Landry 1999). In addition, 8 shepherds and aid shepherds have been engaged in the project this year in order to advice the farmers or to protect sheep flocks located in hot spots. At last, donkeys (18) and electric fences have been used to protect smaller sheep flocks. An evaluation of these measures will be presented in a forthcoming paper.

References :

Landry, J.-M. 1999. The use of guard dogs in the Swiss Alps : a first analysis. KORA report No 2, 26 pp.

You can find this report on the net on:
www.kora.unibe.ch/main.htm?ge/publics/reports.htm (pdf-files in English, French and German)

Who did it?
Age and sex specific depredation rates of Eurasian lynx on domestic sheep

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The question of if "problem individuals" exist – in terms of individuals that kill relatively more livestock than others – constantly recurs within the field of livestock depredation research. The proposed existence of these individuals likes behind the rational of many mitigation measures, such as selective control or translocation. Norway suffers very heavy losses of lambs each summer – in 1999 c. 9000 lambs were killed by Eurasian lynx – and effective mitigation measures are needed. Lynx hunting is used to limit the growth in numbers, and if certain "problem individuals" could be targeted it would be possible to achieve a greater reduction in conflict. However, there is very little empirical evidence, either for, or against the existence of problem individuals. In order to address the issue we have intensively followed radio-collared lynx in two study areas in south-eastern and central Norway during summer. Individuals were intensively followed around the clock, and the areas where the lynx passed close to a sheep flock or appeared to have killed a prey were subsequently searched, often with the use of dogs. A total of 34 individual lynx (of all sex and age classes) were followed between 1994 and 1999. All study lynx had access to free-ranging and unguarded sheep within their normal home ranges. In 634 nights of intensive tracking, 63 sheep and 3 goats were found, in addition to natural prey such as roe deer. For each age / sex class of lynx we calculated a kill rate (number livestock killed per 100 nights when the lynx passed through a sheep flock). The kill rates were 38, 53, 8 and 26 for adult males, yearling males, adult females and yearling females, respectively. This massive sex difference was mainly due to the fact that 12 of 13 cases of multiple killing were due to males, in episodes where between 2 and 8 sheep were killed in a single attack. Livestock formed an insignificant part of lynx diet during summer. There was no evidence for the existence of specific individuals that were worse than others, but rather strong evidence for a problem sex - males. The implications are that it is not likely to be a real-

istic management strategy to try and selectively remove problem individuals if they do not exist. Strongly skewing the sex ratio of the population towards females is also unlikely to be advisable. The Implication is that the only practical solutions are (1) regulating total lynx density or (2) investing in mitigation measures such as changes in husbandry practice. The very high rates of depredation by lynx in our study are likely due to the fact that sheep were widely distributed in scattered, unguarded flocks in the forest, making them hard for lynx to avoid in the course of their normal travels. Such a husbandry system is unlikely to require special behaviour on the part of a lynx. We predict that problem individuals are more likely to occur in husbandry systems where sheep are guarded, and a lynx must cross obstacles (fences), avoid dogs or shepherds, or leave the forest to hunt on open pastures.

Further reading

Linnell J.D.C., Odden J., Smith M., Aanes R., Swenson J.E. 2000: Large carnivores that kill livetsock: Do problem individuals exist? Wildl. Soc. Bull. 27: 698-705

Re-publication of
Cheetah survival on Namibian farmlands

Marker L., D. Kraus, D. Barnett and S. Hurlbut 1999

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